

REMARKS

This Corrected Amendment and Response to Office Action is being submitted to include the text of withdrawn claim 23. The present patent application was filed on July 19, 2006 (claiming priority to International Patent Application PCT/IB2003/005129 filed on November 13, 2003 and published in English with Publication No. WO 2004/056470 A1 on July 8, 2004, under PCT article 21(2), which in turn claims priority from European Application No. 02028555.7, filed on December 20, 2002) with claims 1-23. Claim 23 has been withdrawn in response to a previous restriction requirement. Therefore, claims 1-22 are presently pending in the application. Applicants propose herein to cancel claims 2, 3, 18 and 19 without prejudice. Applicants also herein propose to amend claims 1 and 8. Claim 8 is amended herein to correct a typographical omission. Support for the amendment to claim 1 can be found, for example, on page 6, lines 3-10 and page 6, line 33 through page 7, line 6. No new matter is being introduced.

The Examiner rejected claims 1, 2, 4, 6, 7, 9 and 20 under 35 U.S.C. §102(b) as allegedly being anticipated by Hawker et al. (US 2002/0071943) (hereinafter "Hawker"). Also, the Examiner rejected claims 1, 2, 5-7, 9-11, 14 and 21 under 35 U.S.C. §102(b) as allegedly being anticipated by Maracas et al. (US 5,731,152) (hereinafter "Maracas"). The Examiner rejected claims 1, 2, 4, 6, 7, 9, 17 and 21 under 35 U.S.C. §102(e) as allegedly being anticipated by Fang et al. (US 7,105,347) (hereinafter "Fang") as evidenced by Maracas. Additionally, the Examiner rejected claims 1, 2, 4, 6, 7, 9-11, 13 and 21 under 35 U.S.C. §102(e) as allegedly being anticipated by Korlach et al. (US 2003/0044781) (hereinafter "Korlach").

The Examiner rejected claims 3 and 22 under 35 U.S.C. §103(a) as allegedly being unpatentable over Hawker in view of Kumar et al. (Applied Physics Letters (1993) 63(14): 2002-2004). Also, the Examiner rejected claim 8 under 35 U.S.C. §103(a) as allegedly being unpatentable over Hawker in view of Kumar et al. (US 5,512,131). The Examiner additionally rejected claims 12, 15 and 16 under 35 U.S.C. §103(a) as allegedly being unpatentable over Maracas in view of Mian et al. (US 5,686,271) (hereinafter "Mian"). Furthermore, the Examiner

rejected claims 8, 18 and 19 under 35 U.S.C. §103(a) as allegedly being unpatentable over Hawker in view of Biebuyck et al. (WO 00/79023) (hereinafter "Biebuyck").

The Examiner also provisionally rejected claims 1-22 under 35 U.S.C. §101 double patenting grounds as allegedly claiming the same invention as that of claims 1-22 of co-pending  
5 Application No. 11/154,965.

The comments of the Examiner in forming the rejections are acknowledged and have been carefully considered.

§102 REJECTIONS

As highlighted above, the Examiner rejected claims 1, 2, 4, 6, 7, 9 and 20 under 35 U.S.C. §102(b) as allegedly being anticipated by Hawker. Applicants respectfully submit that the amendment to independent claim 1 overcomes the rejection. Applicants assert that Hawker  
5 does not teach or suggest the claimed step of transferring seed molecules from the stamp to the surface, wherein the transferring comprises transferring a fraction of the seed molecules loaded on the stamp to the surface and wherein the transferring comprises adsorbing the seed molecules to the stamp and adsorbing the seed molecules to the surface, the adsorption of the seed molecules to the stamp being stronger than the adsorption of the seed molecules to the surface.  
10 “A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

Furthermore, the limitation of “adsorbing the seed molecules to the stamp and adsorbing the seed molecules to the surface, the adsorption of the seed molecules to the stamp being  
15 stronger than the adsorption of the seed molecules to the surface,” which previously appeared in now canceled claim 3, was not included as part of the rejection. As noted by the Examiner on page 8 of the outstanding Office Action, “Hawker does not teach that the adsorption of the seed molecules to the stamp is stronger than the adsorption of the seed molecules to the surface as required by claim 3.”

20 Additionally, Applicants respectfully submit that claims 1, 2, 4, 6, 7, 9 and 20 are not anticipated by Hawker because in paragraphs 80-83, the Hawker reference teaches that hexadecylthiol is printed as the ink (paragraph 80) and then the printed surface is immersed into a solution of  $\text{HO}(\text{CH}_2\text{CH}_2\text{O})_2(\text{CH}_2)_{11}\text{SH}$  (paragraph 81) from which then the polymerization is taking place (paragraph 82). Immersion into a mM solution always leads to a complete  
25 monolayer. The “chemical amplification” described in paragraph 83 is therefore not completing a sparsely printed molecule, but rather is a thickening of a film. The amendments to independent

claim 1, therefore, are not anticipated by the Hawker reference. And as stated in the present specification, beginning on page 6, line 33,

[i]n particularly preferred embodiments of the present invention, the process is self completing, thus solving the aforementioned problem of variable transfer ration. This allows more prints between re-inking, to conserve ink, and to print faster, without significantly distorting surface patterning. A subsequent reaction may convert printed species to different species which may be unprintable by other techniques. The present invention is particularly although not exclusively useful for amplifying sparse monolayers... (Emphasis added).

Thus, Applicants respectfully request reconsideration and withdrawal of the rejection of claims 1, 2, 4, 6, 7, 9 and 20 under 35 U.S.C. §102(b).

As also highlighted above, the Examiner rejected claims 1, 2, 5-7, 9-11, 14 and 21 under 35 U.S.C. §102(b) as allegedly being anticipated by Maracas. Applicants respectfully submit that the amendment to independent claim 1 overcomes the rejection. Applicants assert that Maracas does not teach or suggest the claimed step of transferring seed molecules from the stamp to the surface, wherein the transferring comprises transferring a fraction of the seed molecules loaded on the stamp to the surface and wherein the transferring comprises adsorbing the seed molecules to the stamp and adsorbing the seed molecules to the surface, the adsorption of the seed molecules to the stamp being stronger than the adsorption of the seed molecules to the surface. "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

Furthermore, the limitation of "adsorbing the seed molecules to the stamp and adsorbing the seed molecules to the surface, the adsorption of the seed molecules to the stamp being stronger than the adsorption of the seed molecules to the surface," which previously appeared in now canceled claim 3, was not included as part of the rejection. Additionally, Applicants

respectfully submit that the process taught by Maracas is not a molecular transfer that starts from a monolayer on a stamp, but rather it is a fluid transfer within the context of pin printing.

Thus, Applicants respectfully request reconsideration and withdrawal of the rejection of claims 1, 2, 5-7, 9-11, 14 and 21 under 35 U.S.C. §102(b).

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As highlighted above, the Examiner rejected claims 1, 2, 4, 6, 7, 9, 17 and 21 under 35 U.S.C. §102(e) as allegedly being anticipated by Fang as evidenced by Maracas. Applicants respectfully submit that the amendment to independent claim 1 overcomes the rejection. Applicants assert that Fang (and/or Maracas) does not teach or suggest the claimed step of  
10 transferring seed molecules from the stamp to the surface, wherein the transferring comprises transferring a fraction of the seed molecules loaded on the stamp to the surface and wherein the transferring comprises adsorbing the seed molecules to the stamp and adsorbing the seed molecules to the surface, the adsorption of the seed molecules to the stamp being stronger than the adsorption of the seed molecules to the surface. “A claim is anticipated only if each and  
15 every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

Furthermore, the limitation of “adsorbing the seed molecules to the stamp and adsorbing the seed molecules to the surface, the adsorption of the seed molecules to the stamp being  
20 stronger than the adsorption of the seed molecules to the surface,” which previously appeared in now canceled claim 3, was not included as part of the rejection.

Thus, Applicants respectfully request reconsideration and withdrawal of the rejection of claims 1, 2, 4, 6, 7, 9, 17 and 21 under 35 U.S.C. §102(e).

25 As also highlighted above, the Examiner rejected claims 1, 2, 4, 6, 7, 9-11, 13 and 21 under 35 U.S.C. §102(e) as allegedly being anticipated by Korlach. Applicants respectfully

submit that the amendment to independent claim 1 overcomes the rejection. Applicants assert that Korlach does not teach or suggest the claimed step of transferring seed molecules from the stamp to the surface, wherein the transferring comprises transferring a fraction of the seed molecules loaded on the stamp to the surface and wherein the transferring comprises adsorbing the seed molecules to the stamp and adsorbing the seed molecules to the surface, the adsorption of the seed molecules to the stamp being stronger than the adsorption of the seed molecules to the surface. “A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

Furthermore, the limitation of “adsorbing the seed molecules to the stamp and adsorbing the seed molecules to the surface, the adsorption of the seed molecules to the stamp being stronger than the adsorption of the seed molecules to the surface,” which previously appeared in now canceled claim 3, was not included as part of the rejection. Additionally, Applicants respectfully submit that Korlach teaches how to sequence nucleic acid molecules based on the attachment of a primer on a surface, and that the replication process described by Korlach does not teach how to amplify the initial molecules on the surface to make a homogeneous monolayer, but only shows how to make a double stranded nucleic acid from a single strand nucleic acid.

Therefore, the amplification performed by Korlach does not densify the initially sparse printed layer, but only adds complementary nucleic acids toward the out-of-plane direction of the surface in a way that permits deciphering the nucleic acid sequence using labeled nucleic bases. The Korlach reference does not lead to having a resulting homogeneous layer on a surface for use.

Thus, Applicants respectfully request reconsideration and withdrawal of the rejection of claims 1, 2, 4, 6, 7, 9-11, 13 and 21 under 35 U.S.C. §102(e).

§103 REJECTIONS

As highlighted above, the Examiner rejected claims 3 and 22 under 35 U.S.C. §103(a) as allegedly being unpatentable over Hawker in view of Kumar et al. (Applied Physics Letters (1993) 63(14): 2002-2004). Specifically, the Examiner, on page 8 of the Office Action, stated  
5 that “Hawker teaches the method of claims 1, 2, 4, 6, 7, 9 and 20, as discussed above.”

Applicants respectfully submit that, as detailed above, Hawker does not teach or suggest every claim limitation of amended independent claim 1. For example, Hawker does not teach or suggest the limitation of self-completing amplification of the seed molecules via an amplifying reaction to produce the monolayer. To establish *prima facie* obviousness of a claimed invention,  
10 all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). Furthermore, if an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).

Thus, Applicants respectfully request reconsideration and withdrawal of the rejection of  
15 claims 3 and 22 under 35 U.S.C. §103(a).

As highlighted above, the Examiner rejected claim 8 under 35 U.S.C. §103(a) as allegedly being unpatentable over Hawker in view of Kumar et al. (US 5,512,131). Specifically, the Examiner, on page 9 of the Office Action, stated that “Hawker teaches the method of claims  
20 1, 2, 4, 6, 7, 9 and 20, as discussed above.”

Applicants respectfully submit that, as detailed above, Hawker does not teach or suggest every claim limitation of amended independent claim 1. For example, Hawker does not teach or suggest the limitation of transferring seed molecules from the stamp to the surface, wherein the transferring comprises transferring a fraction of the seed molecules loaded on the stamp to the  
25 surface and wherein the transferring comprises adsorbing the seed molecules to the stamp and adsorbing the seed molecules to the surface, the adsorption of the seed molecules to the stamp

being stronger than the adsorption of the seed molecules to the surface. To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). Furthermore, if an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).

Thus, Applicants respectfully request reconsideration and withdrawal of the rejection of claim 8 under 35 U.S.C. §103(a).

As highlighted above, the Examiner additionally rejected claims 12, 15 and 16 under 35 U.S.C. §103(a) as allegedly being unpatentable over Maracas in view of Mian et al. (US 5,686,271) (hereinafter "Mian"). Specifically, the Examiner, on page 11 of the Office Action, stated that "Maracas teaches the method of claims 1, 2, 5-7, 9-11, 14 and 21, as discussed above."

Applicants respectfully submit that, as detailed above, Maracas does not teach or suggest every claim limitation of amended independent claim 1. For example, Maracas does not teach or suggest the limitation of transferring seed molecules from the stamp to the surface, wherein the transferring comprises transferring a fraction of the seed molecules loaded on the stamp to the surface and wherein the transferring comprises adsorbing the seed molecules to the stamp and adsorbing the seed molecules to the surface, the adsorption of the seed molecules to the stamp being stronger than the adsorption of the seed molecules to the surface. To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). Furthermore, if an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).

Thus, Applicants respectfully request reconsideration and withdrawal of the rejection of claims 12, 15 and 16 under 35 U.S.C. §103(a).



As highlighted above, the Examiner rejected claims 8, 18 and 19 under 35 U.S.C. §103(a) as allegedly being unpatentable over Hawker in view of Biebuyck et al. (WO 00/79023) (hereinafter "Biebuyck"). Applicants note that claims 18 and 19 have been proposed to be canceled herein without prejudice. Also, the Examiner, on page 12 of the Office Action, stated that "Hawker teaches the method of claims 1, 2, 4, 6, 7, 9 and 20, as discussed above."

Applicants respectfully submit that, as detailed above, Hawker does not teach or suggest every claim limitation of amended independent claim 1. For example, Hawker does not teach or suggest the limitation of transferring seed molecules from the stamp to the surface, wherein the transferring comprises transferring a fraction of the seed molecules loaded on the stamp to the surface and wherein the transferring comprises adsorbing the seed molecules to the stamp and adsorbing the seed molecules to the surface, the adsorption of the seed molecules to the stamp being stronger than the adsorption of the seed molecules to the surface. To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). Furthermore, if an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).

Thus, Applicants respectfully request reconsideration and withdrawal of the rejection of claims 8, 18 and 19 under 35 U.S.C. §103(a).

#### §101 REJECTION

As highlighted above, the Examiner provisionally rejected claims 1-22 under 35 U.S.C. §101 double patenting grounds as allegedly claiming the same invention as that of claims 1-22 of co-pending Application No. 11/154,965. Applicants respectfully submit that the §101 rejection is rendered moot because the co-pending application in question has been abandoned.

Thus, Applicants respectfully request reconsideration and withdrawal of the rejection of claims 1-22 under 35 U.S.C. §101.

Therefore, Applicants submit that all of the pending claims, i.e., claims 1-22, are in condition for allowance, and such favorable action is earnestly solicited.

If any outstanding issues remain, or if the Examiner has any further suggestions for expediting allowance of this application, the Examiner is invited to contact the undersigned at the telephone number indicated below.

The Examiner's attention to this matter is greatly appreciated.

Respectfully submitted,



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